

# rethink sugary drink

## Consensus Statement Sugar-sweetened beverages

### Definitions

- “Sugar-sweetened beverages” refer to all non-alcoholic water based beverages with added sugar.
- “Sugar-sweetened soft drinks” refer to all non-alcoholic carbonated drinks, excluding non-sugar sweetened varieties and energy drinks.

### Key messages

- The consumption of sugar-sweetened beverages is associated with increased energy intake and in turn, weight gain and obesity. It is well established that obesity is a leading risk factor for diabetes, cardiovascular disease and some cancers.
- Young Australians are very high consumers of sugar-sweetened beverages, and sugar-sweetened soft drinks in particular. The highest consumers of sugar-sweetened beverages are young males (12 to 24 years of age) and males are higher consumers than females across all age groups.
- The prevalence of sugar-sweetened beverages’ consumption is higher among lower socio-economic groups, compared to higher socio-economic groups.
- A range of factors influence the consumption of sugar-sweetened beverages, including availability, price and marketing.

### Recommendations

- Rethink Sugary Drink (Rethink) partner organisations recommend that adults and children should limit sugar-sweetened beverages and instead drink water or reduced fat milk.
- Australian governments, schools, non-government organisations and others should take comprehensive action to encourage children and adults to reduce sugar-sweetened beverages’ consumption. Actions should include:
  - A social marketing campaign, supported by Australian governments, to highlight the health impacts of sugar-sweetened beverages consumption and encourage people to reduce their levels of consumption;
  - An investigation by the federal Department of Treasury and Finance into tax options to increase the price of sugar-sweetened beverages relative to healthier options to change purchasing habits and achieve healthier diets;
  - Comprehensive restrictions by Australian governments to reduce children’s exposure to marketing of sugar-sweetened beverages, including through schools and children’s sports, events and activities;
  - Comprehensive mandatory restrictions by state governments on the sale of sugar-sweetened beverages (combined with an increase in the availability of free water) in all schools, government institutions, children’s sports and events and places frequented by children, i.e. activity centres.
  - Development of policies by state and local governments to reduce the availability of sugar-sweetened beverages in workplaces, government institutions, health care settings and other public places.

## 1 “Sugar-sweetened beverages”

For the purpose of this position paper, “sugar-sweetened beverages” refer to all non-alcoholic water based beverages with added sugar, including sugar-sweetened soft drinks, energy drinks, fruit drink, sports drinks and cordial. This term does not include milk-based products, 100% fruit juice or non-sugar sweetened beverages (i.e. artificial, non-nutritive or intensely sweetened). “Sugar-sweetened soft drinks” refers to all non-alcoholic carbonated drinks, excluding non-sugar sweetened varieties and energy drinks. References to ‘fruit juice’ include 100% fruit juices and sugar added fruit juices unless otherwise stated. These definitions have been developed from the literature on the influence of sugar-sweetened beverages and sugar-sweetened soft drinks on health and aim to reflect the data that exists in relation to consumption and sales in Australia.<sup>1-7</sup>

## 2 What are the health impacts of sugar-sweetened beverage consumption?

**Overweight/obesity:** Systematic reviews of the evidence have consistently found a significant association between sugar-sweetened beverages consumption and increased energy intake.<sup>5, 6, 8</sup> While various studies have found different effects and effect sizes (due largely to differences in study methodologies, sample characteristics and definitions in variables), there is also evidence of at least a probable association between sugar-sweetened beverages consumption and weight gain, body mass index, overweight and obesity (among adults and children).<sup>4-6, 8</sup> With respect to sugar-sweetened soft drinks in particular, research indicates that people do not compensate for the additional energy they consume from these drinks by reducing consumption of other foods, leading to increased total energy intake.<sup>5, 9, 10</sup> There is evidence that the increase in energy intake is greater than what can be attributed to these drinks alone, indicating that drinking sugar-sweetened soft drinks may lead people to consume more energy from other sources.<sup>4, 5, 9, 11</sup> This may be because sugar-sweetened soft drinks stimulate appetite or suppress satiety.<sup>4, 5, 9, 11</sup>

A systematic review recently undertaken in the United States estimated that sugar-sweetened beverages’ consumption had accounted for at least one-fifth of the weight gained between 1977 and 2007 in the US population (among persons 2 years of age and above).<sup>8</sup> It has also been estimated that consuming one can of soft drink per day could lead to a 6.75kg weight gain in one year if these calories are added to a typical US diet and not offset by reduction in other energy sources.<sup>12</sup>

Leading international health organisations, including the World Health Organization (WHO) and World Cancer Research Fund (WCRF) consider sugar-sweetened beverages’ consumption to be a probable risk factor for weight gain and obesity.<sup>13-15</sup> The WHO has recommended that consumption of these beverages should be restricted and the WCRF has recommended that consumption should be avoided.<sup>13-15</sup>

**Type 2 Diabetes:** Systematic reviews and meta-analyses have found a significant relationship between the amount and frequency of sugar-sweetened beverages consumed and the increased risk of type-2 diabetes.<sup>5, 16</sup> For example, it has been estimated that the risk of type-2 diabetes is 26% greater among the highest consumers of sugar sweetened beverages (most often 1 – 2 servings/day), compared to those with the lowest levels of intake (none or <1 serving/month).<sup>16</sup>

**Cardiovascular disease:** The consumption of added sugar by adolescents, with the greatest source being sugar-sweetened soft drinks, has been associated with multiple factors related to the increased risk of cardiovascular disease, including increased dyslipidemia (lower HDL ‘good’ cholesterol levels and higher LDL ‘bad’

cholesterol levels) among adolescents regardless of body size and increased insulin resistance among those that are overweight or obese.<sup>17</sup>

**Other chronic diseases:** It is well established that obesity is a leading risk factor for a range of other chronic diseases, including stroke, chronic kidney disease and some cancer (including endometrial, oesophageal, renal, gallbladder, bowel and postmenopausal breast cancers).<sup>13, 18</sup> There is also evidence of an independent association between sugar-sweetened soft drink consumption and the development of chronic kidney disease and kidney stone formation.<sup>19</sup> People who regularly consume one or more sugar-sweetened soft drinks per day have a 58% increased risk of developing chronic kidney disease, compared to people who do not consume these drinks.<sup>20</sup> There is also emerging evidence that sugar-sweetened beverage consumption may be independently associated with the risk of stroke.<sup>21</sup>

**Dental caries:** Despite being largely preventable, dental caries is the most prevalent health problem among Australians.<sup>22</sup> Frequent consumption of sugar is the main dietary cause of dental caries and there is considerable evidence in both Australia and internationally that the consumption of sugar-sweetened beverages increases the risk of dental caries.<sup>23-26</sup> Frequent consumption of sugar-sweetened beverages causes dental caries through the high levels of sugar that are metabolised by the bacteria in the mouth (plaque). The bacteria use these sugars to make acid and if teeth are exposed to this acid long enough, the tooth enamel is demineralized and dental caries will occur.<sup>23</sup>

**Dental erosion:** Studies have demonstrated an association between dental erosion and the amount and frequency of soft drinks and fruit juice consumed.<sup>4, 13</sup> The World Health Organization therefore recommends limiting soft drink and juice intake to minimise the occurrence of dental erosion.<sup>13</sup>

### 3 How much do Australians consume?

The Australian Dietary Guidelines 2013 recommend that consumption of added sugar in the diet be limited, particularly sugar-sweetened drinks.<sup>4, 27</sup> These recommendations are based upon evidence of a probable association (Grade B evidence) between sugar-sweetened beverage consumption and an increased risk of weight gain in adults and children.<sup>4</sup> They are also based upon evidence of a suggestive association (Grade C evidence) between soft drink consumption and an increased risk of dental caries in children, as well as an increased risk (from cola drinks) of reduced bone strength.<sup>4</sup>

There is evidence that sugar-sweetened beverages continue to be consumed by large numbers of adults and children in Australia.<sup>1, 3, 7</sup> While the sale of sugar-sweetened soft drinks may have decreased over the past decade, and the sale of other sugar-sweetened beverages has increased, sugar sweetened soft drinks continue to hold the largest volume share of 'water based beverage'\* sales in Australia.<sup>2, 28</sup> In 2014, Australia was the 11<sup>th</sup> highest country for per capita consumption of soft drinks, consuming 86.8 litres per capita.<sup>29</sup> Male adolescents (12–18 years of age) and young men (19-24 years of age) are the highest consumers of sugar-sweetened beverages, including sugar-sweetened soft drinks, and across almost all age groups, males are higher consumers than females.<sup>1, 3, 7, 30, 31</sup>

The Australian Health Survey 2011-12 reported that soft drinks (including flavoured mineral waters and intensely sweetened soft drinks) were consumed by 29% of the

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\* Water based beverages excludes milk based drinks, fruit juice, cordials and tap water.

population. The survey found 14 to 18 year-olds to be the highest consumers of these drinks, with 51% of males and 38% of females in this age group consuming a soft drink on the day prior to interview (one-third of all soft drinks consumed were intensely sweetened soft drinks). Among the population who reported consuming soft drink, the median daily amount consumed was the equivalent of a regular can (375 ml). The survey also found that 27% of the population consumed fruit and vegetable juices and drinks (95% of these beverages were made from fruit rather than vegetable or a fruit and vegetable blend) on the day prior to interview. The survey found 2 – 3 years olds to be the highest consumers, with 44% having consumed juice or a fruit drink on the day prior to interview.<sup>31</sup>

By comparison, the 2007 Australian National Children's Nutrition and Physical Activity Survey found 47% of children (aged 2 to 16 years) consumed sugar-sweetened beverages daily (including sugar-sweetened soft drinks, cordials, fruit drinks, sports drinks and energy drinks).<sup>32</sup> Daily, sugar-sweetened soft drinks were consumed by 25% of children (aged 2 to 16 years), with a mean daily intake among these children of approximately 1.2 cans (between 436mL and 448mL per day).<sup>2, 3, 32</sup> (See Table 1 below). Among children, consumption of all sugar-sweetened beverages and sugar-sweetened soft drinks increase with age, with adolescent boys being the highest consumers.<sup>2, 3, 7, 30, 32</sup> Among children aged 2 to 16 years that consumed sugar-sweetened soft drinks, these drinks contributed 26% of their daily sugar intake, 13% of their total carbohydrate intake and 7% of their total energy intake.<sup>3</sup>

Comparison undertaken between the 2007 survey and 1995 National Nutrition Survey have suggested a significant decrease in the percentage of children consuming sugar-sweetened soft drinks (except 9-13 year olds, where the percentage remained the same) and sugar sweetened beverages ( $p < 0.001$ ).<sup>2</sup> The most significant reduction was among children aged 8 years and under.<sup>2</sup> The mean quantity of sugar-sweetened soft drinks consumed per consumer remained similar for all children (except 9–13 year olds, where the mean quantity consumed decreased).<sup>2</sup> The mean quantity of sugar-sweetened beverages consumed per consumer decreased across all age groups.<sup>2</sup> The 2007 survey did not include 17 or 18 year olds, which the 1995 survey found to be the highest consumers of sugar-sweetened soft drinks, with 50% reporting consuming soft drinks on the day of the survey (with a mean daily intake among consumers of 714mL or approximately 2 cans).<sup>7</sup> Other limitations in comparing these surveys include that they were conducted at different time intervals, using different sampling frames and with differing levels of awareness of unhealthy diets and obesity.<sup>2</sup>

For sugar-sweetened beverages other than sugar-sweetened soft drinks, the 2007 survey found that 37% of children consumed fruit juice, 10% consumed fruit drink, 20% consumed cordial and 2% consumed sports drinks and/or other flavored waters.<sup>3</sup> The mean daily intake among consumers by standard glass was highest for sports drinks, followed by sugar-sweetened soft drinks and cordials.<sup>3</sup> The high mean daily intake of sports drinks was likely to be influenced by their standard bottle size.<sup>3</sup> (See Table 1 below). There is evidence that bottle sizes for all sugar-sweetened beverages have steadily increased over the last 50 years, and that increased bottle size increases the volume of beverage consumed, regardless of beverage type.<sup>7</sup> Food intake has been found not to decrease, increasing extra energy intake overall.<sup>7</sup>



**Table 1. Daily consumption of sugar-sweetened beverages and 100% fruit juice among children, including mean daily intake across all children and among children that consume each beverage.**

	Consumed by % of children	Mean daily intake (across all children)	Mean daily intake (among children that consume the specific beverage)
<b>Fruit juice</b>	37%	112g/day (1/2 cup)	301mL/day (1.2 standard glasses)
<b>Sugar-sweetened soft drink</b>	25%	107g/day (1/3 can)	436mL/day (1.2 cans/1.7 standard glasses)
<b>Fruit drink</b>	10%	Not reported	1.2 standard glasses (mL/day not reported)
<b>Cordial</b>	20%	Not reported	1.7 standard glasses (mL/day not reported)
<b>Sports drinks and/or flavoured water</b>	2%	12g/day (0.2 standard classes )	620mL/day (2.5 standard glasses)

*Compiled from 2007 Australian National Children's Nutrition and Physical Activity Survey data, reported in Mortensen A 2010.<sup>3</sup>*

A national survey of secondary students in 2009-10 (NaSSDA survey) reported similar results.<sup>33</sup> Thirty per cent reported consuming four or more cups (1L or more) of soft drink, cordial or sports drink per week.<sup>33</sup> Males were again found to consume higher quantities than females, and the prevalence of consuming four or more cups (1L or more) of these beverages increased during adolescence.<sup>33</sup>

Of further note, a survey conducted by Food Standards Australia New Zealand in 2003 found 12 to 17 year olds to be the highest consumers of sugar-sweetened soft drinks, with 78% reporting consuming these drinks in the week prior to the survey (followed by 75% of 18 to 24 year olds as discussed below).<sup>30</sup>

In adults, consumption of all types of sugar-sweetened beverages decreases with age for both frequency and mean daily intake.<sup>1, 7</sup> Young men aged 19 to 30 years are the highest adult consumers of sugar-sweetened soft drinks.<sup>1, 7, 31</sup> The Australian Health Survey 2011-12 reported that 45% of men in this age group had consumed soft drink (including flavoured mineral water and intensely sweetened soft drinks) on the day prior to interview.<sup>31</sup> In 1995, the National Nutrition Survey found that 58% of this group of consumers drank an average of 800mL (2.1 cans) per day.<sup>7</sup> The 2003 FSA NZ survey reported that 75% of 18–24 year-olds had consumed sugar-sweetened carbonated soft drinks in the previous week.<sup>30</sup>

People from socially disadvantaged groups (across all age groups) are significantly higher consumers of sugar-sweetened beverages than those from higher socio-economic groups.<sup>3, 7</sup> For example, the National Children's Nutrition and Physical

Activity Survey in 2007 found that 30% of children in the lowest socio-economic status (SES) regions consumed sugar-sweetened soft drinks on the day of the survey, compared to 19% in the highest SES regions.<sup>3</sup> Among adults, the FSANZ survey reported an association between occupation and soft drinks consumption, with those unemployed or in unskilled occupations consuming more sugar-sweetened beverages (and sugar-sweetened soft drinks in isolation) than white collar workers and professionals/managers.<sup>30</sup>

#### **4 What are the factors influencing sugar-sweetened beverage consumption?**

Factors influencing sugar-sweetened beverages consumption across the population include advertising and marketing, price, taste, availability and role modelling by significant others.<sup>7, 34-36</sup>

Among adults, social settings are key triggers for consumption, particularly where alcohol is consumed. The purchase of fast food and the availability of soft drinks in the home, workplace and other social settings are also leading factors.<sup>37</sup> Among children, the availability of sugar-sweetened beverages in the home and taste preferences are the main drivers of consumption.<sup>34-36</sup> The availability of sugar-sweetened beverages in schools is also a key driver.<sup>34</sup>

Soft drinks are heavily promoted through media advertising, a wide variety of entertainment and sporting venues, children's sports and events, targeting of schools, movie tie-ins and merchandise.<sup>7</sup> In Australia in 2009, Coca Cola brands spent \$29.6 million on media advertising, PepsiCo spent \$12.3 million and Schweppes \$10 million.<sup>38</sup> The sponsorship of children's sports and events is a key marketing technique, for example in 2015 Coca Cola sponsored the Moomba festival in Victoria.

There is evidence from several systematic reviews that food and beverage marketing influences the types of food and beverages children prefer, demand and consume, and is likely to contribute to poor diets, negative health outcomes, weight gain and obesity in children.<sup>39</sup>

Price also influences consumption of sugar-sweetened beverages.<sup>40, 41</sup> A recent systematic review found that soft drinks and juice have high price elasticity of demand.<sup>40</sup> After food purchased away from home, soft drinks are the category of food or beverage products most responsive to price changes.<sup>40</sup> Experts estimate that a 10% increase in soft drink prices could reduce consumption by 8-10%.<sup>40</sup> It has also been estimated that a 20% tax on sugar sweetened beverages could reduce body weight by 0.7 to 1.2kg per person per year.<sup>42</sup> The influence of price elasticity on demand among different socio-economic groups requires further research.

#### **5 What is the effectiveness of interventions to reduce sugar-sweetened beverage consumption**

A comprehensive approach from Australian governments, schools, non-government organisations and others is required to improve diets and combat the problems of overweight and obesity.<sup>13, 43</sup> Reducing the consumption of sugar-sweetened drinks in Australia will require bold regulatory reforms and a range of policies and programs aimed at the factors influencing consumption, such as marketing, availability and price.<sup>43</sup>

Food and beverage advertising in Australia is currently regulated under a complex mix of statutory regulations and co- and self-regulatory codes.<sup>44</sup> However these



regulations and codes are inadequate to protect children from the problems of sugar-sweetened beverages advertising to children as they do not restrict the volume of advertising that children are exposed to, nor do they adequately restrict the marketing techniques most commonly used to target children, such as the sponsorship of children's sports, events and activities. There are also significant deficiencies in the administration and enforcement of the self-regulatory codes.<sup>44</sup>

There is evidence that school based programs can have a moderate impact (at least in the short term) on reducing children's consumption of sugar-sweetened beverages, particularly when education campaigns and strategies to modify the environment are combined, and the strategies take a whole of school approach and extend to parents and families.<sup>45</sup> However school based programs are undermined by a range of other factors, including the promotion and ready availability of sugar sweetened beverages outside of school grounds.<sup>45</sup>

The "Guidelines for healthy food and drinks supplied in school canteens" (as part of the National Healthy School Canteens project) aim to provide nationally consistent guidelines, building on state and territory based school canteen initiatives.<sup>46</sup> Under these national guidelines, sugar-sweetened beverages are not recommended for sale in school canteens. State governments have introduced their own policies banning the sale of sugar-sweetened beverages and other unhealthy foods in school canteens, but these policies may be being undermined by poor implementation and monitoring.<sup>47</sup> An evaluation in Victoria in 2010 found that banned foods continued to appear on 37% of Victorian government school menus, and of these menus, 63% continued to display banned beverages.<sup>47</sup>

There has been increasing international emphasis in recent years on using taxes to increase the price of unhealthy products, to reduce consumption. Several countries have enacted food taxes to improve population health, most notably Mexico, France, Hungary and a number of countries in the Western Pacific.<sup>48, 49</sup> Mexico's tax of approximately 10% on SSBs took effect on 1 January 2014. Evaluation data demonstrates that by December 2014, purchases of taxed beverages had declined by 12%. A decline was found across all socio-economic groups, with reductions highest among lower socio-economic households, averaging up to a 17% decline by December 2014. There was also an approximate 4% increase in the purchase of untaxed beverages, driven mainly by an increase in the purchase of bottled water.<sup>50</sup>

Since 2013, published economic modelling of the population health impacts of a tax on sugary drinks in jurisdictions including Australia, India, the UK, New Zealand and South Africa have predicted that a 20% tax would effectively decrease consumption and have significant impacts on population health, even after substitution effects to other beverages (such as fruit juice, milk, coffee and tea) and sugary foods are considered.<sup>51-56</sup> The evaluation of the tax in Hungary which applies to food high in sugar, fat and caffeine found that after implementation companies surveyed had reformulated products, sales of taxed products decreased by 25% and consumption decreased between 25-35% compared to the previous year.<sup>57</sup>

Australians of low socioeconomic status (SES) are disproportionately affected by high rates of diet-related illnesses and stand to derive the greatest benefit from reduced consumption of unhealthy products such as sugar sweetened beverages. A recent review on impact by SES of a sugar-sweetened beverages tax found that lower income households would pay a greater proportion of their income in additional tax. However the monetary burden across all households would be small, with relatively minor differences between higher and lower income households (less than \$5 USD per year).<sup>58</sup> Further, research suggests that young people, lower-income



groups, those most at risk for obesity and those who consume larger quantities of sugar-sweetened beverages are likely to be more responsive to price increases. Therefore, a sugar-sweetened beverages tax would be an equitable population policy to reduce consumption and improve weight and population health outcomes, particularly among those groups who are most at risk of harm.

## 6 Rethink partner organisation recommendations

Rethink partners recommend that adults and children should limit sugar-sweetened beverages and instead drink water or reduced-fat milk. Australian governments should support this call and encourage consumers to limit their sugar-sweetened beverage consumption in line with the new dietary guidelines.

Rethink partners recommend comprehensive action by governments, schools, non-government organisations and others to inform the public about the health impacts of sugar-sweetened beverages and to influence the public to limit their consumption. A comprehensive approach should include:

1. A social marketing campaign, supported by Australian governments, to highlight the health impacts of sugar-sweetened beverages consumption and encourage people to reduce their levels of consumption.
2. An investigation by the federal Department of Treasury and Finance into tax options to increase the price of sugar-sweetened beverages relative to healthier options to change purchasing habits and achieve healthier diets;
3. Comprehensive restrictions by Australian governments to reduce children's exposure to marketing of sugar-sweetened beverages, including through schools and children's sports, events and activities.
4. Comprehensive mandatory restrictions by state governments on the sale of sugar-sweetened beverages (combined with an increase in the availability of free water) in all schools, places frequented by children, such as activity centres and at children's sports and events (with adequate resources to ensure effective implementation, monitoring and evaluation).
5. Development of policies by state and local governments to reduce the availability of sugar-sweetened beverages in workplaces, government institutions, health care settings and other public places.



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